



10340 REGENT CIRCLE ∞ NAPLES, FL 34109
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DIAGNOSTIC PROCEDURE FOR SINGLE COMANCHE FUEL QUANTITY INDICATOR SELECTOR SWITCHES

IF YOU ARE EXPERIENCING ERRONEOUS FUEL QUANTITY INDICATIONS IN YOUR COMANCHE THIS MAY BE OF SOME INTEREST AND ASSISTANCE IN THE DIAGNOSIS AND REPAIR OF THE FUEL QUANTITY INDICATING SYSTEM. THIS IS NOT INTENDED TO REPLACE THE METHODS FOUND IN ANY SERVICE MANUALS NOR TO RE-HASH THEM; RATHER TO OFFER ADDITIONAL INFORMATION. AND OBVIOUSLY ONE SHOULD REFER PROCEDURALLY TO THE APPROPRIATE MANUAL. YOU DETERMINE IF YOUR CAPABILITIES INCLUDE DOING THIS YOURSELF; THERE ISN'T MUCH MYSTERY INVOLVED ONCE THE SYSTEM IS UNDERSTOOD. REFERENCE: SCSM BEGINNING PARAGRAPH 11-78; INCLUDED BELOW.

AN ERROR IN FUEL QUANTITY INDICATION CAN BE CAUSED BY AN INCORRECT RESISTANCE VALUE BEING TRANSMITTED TO THE DISPLAY GAUGE UNIT. THERE CAN BE A FEW SOURCES FOR THIS PROBLEM. CHECKING FOR POOR CONNECTIONS SHOULD BE YOUR FIRST LINE OF DIAGNOSIS, SECONDARY WOULD BE A COMPONENT. IF YOU HAVE FOCUSED YOUR SEARCH ON THE FUEL VALVE SELECTOR AREA, THIS ARTICLE WILL LEND SOME ASSISTANCE AND SUGGESTIONS IN THAT AREA.

ON THE SINGLE MODELS WITH ONE FUEL GAUGE DISPLAY UNIT YOU WILL FIND 4 OVER-RIDE RED PUSH-BUTTON SWITCHES AND A SELECTOR SWITCH CO-LOCATED WITH THE FUEL TANK SELECTOR. THIS AREA IS USUALLY ACCESSED DURING THE ANNUAL INSPECTION AND POTENTIALLY SUBJECT TO REPEATED HANDLING WHICH CAN CAUSE A BROKEN CONNECTION OR OTHER MALADY. ANOTHER PROBLEM IN THIS AREA, ONE OR MORE OF THESE ELECTRICAL COMPONENTS MAY HAVE DEVELOPED SOME RESISTANCE WHICH WILL ADD TO THE VALUE FROM THE FUEL LEVEL TRANSMITTER, THE RESULT WILL BE ERRONEOUS FUEL QUANTITY INDICATION. SO IF YOU HAVE THIS TYPE SYSTEM LET'S PUT THIS ON THE DIAGNOSTIC CHECK LIST IN ADDITION TO THE GAUGE, FUEL TRANSMITTERS, AND CONNECTIONS.

NOW LET'S MOVE ON TO THE WORK-RELATED PORTION. REMOVE THE SUBJECT FUEL SELECTOR PROTECTOR PLATE AS AN ASSEMBLY. ALSO LOOK CAREFULLY HERE FOR A PROBLEM WITH THE KNIFE TERMINALS OR A SOLDERED CONNECTION. EXAMINE THE SOLDER TERMINALS AT EACH OVER-RIDE SWITCH, THESE MAY HAVE BEEN DISTURBED AND POSSIBLY TOUCHING EACH OTHER OR BROKEN. NOTE THE KNIFE TERMINAL CONNECTIONS WRT EACH OTHER; SEE THE WIRING DIAGRAM TO FOLLOW. I THINK ONE EXCELLENT CHANGE IS TO PUT THESE 6 WIRES INTO A RECEPTACLE/PLUG HOUSING ASSEMBLY WHICH WILL SAVE TIME AND ASSURE CORRECT CONNECTION EACH TIME THIS ITEM IS REMOVED.

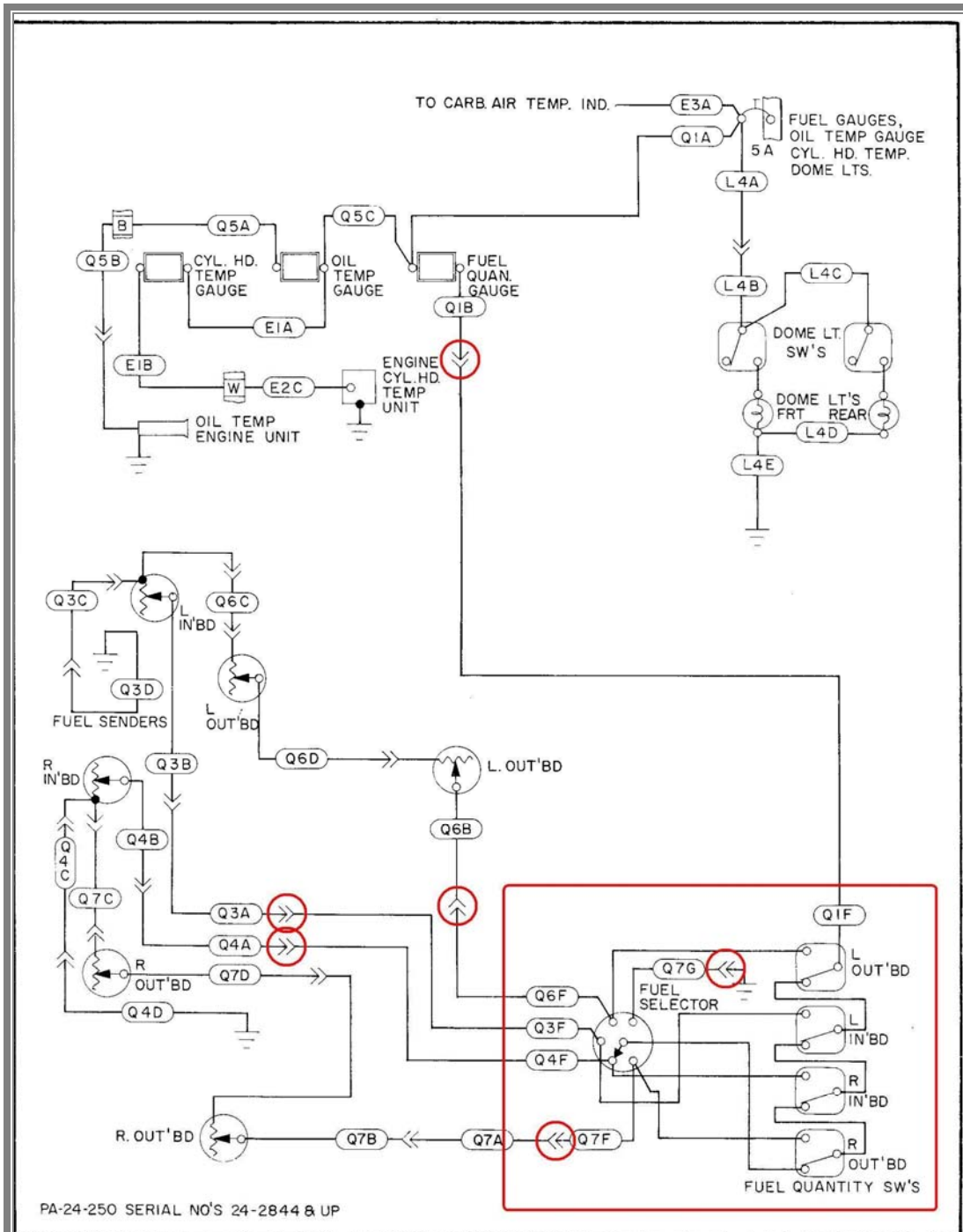
USING AN OHMMETER PROCEED TO CHECK ONE OVER-RIDE SWITCH FOR CONTINUITY AND RESISTANCE IN EACH OF ITS 2 OPERATING POSITIONS, 1) FROM "C" TO "NC" AND 2) FROM "C" TO "NO" WITH THE BUTTON DEPRESSED. IF THE RESULT IS ANYTHING BUT ZERO-RESISTANCE IN EACH INSTANCE YOU HAVE FOUND A PROBLEM. AND LIKEWISE CHECK THE THREE REMAINING OVER-RIDE SWITCHES.

THE WAFER SWITCH SHOULD ALSO BE CHECKED FOR CONTINUITY, RESISTANCE, AND MECHANICAL FUNCTION. THE OVER-RIDE SWITCHES ARE NOT EXPENSIVE UNLIKE THE WAFER SWITCH WHICH IS TERRIBLY SO. IT IS POSSIBLE TO "REPAIR" THE HOLE IN THE WAFER SWITCH SO IT WILL AGAIN "KEY" PROPERLY TO THE SHAFT.

COMANCHE GEAR



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PA-24-250 SERIAL NO'S 24-2844 & UP

FIGURE 9-41. FUEL GAUGE, OIL TEMP. GAUGE, DOME LIGHT, CYLINDER HEAD TEMP.

**ELECTRICAL SYSTEM
 ISSUED: 8/18/72**

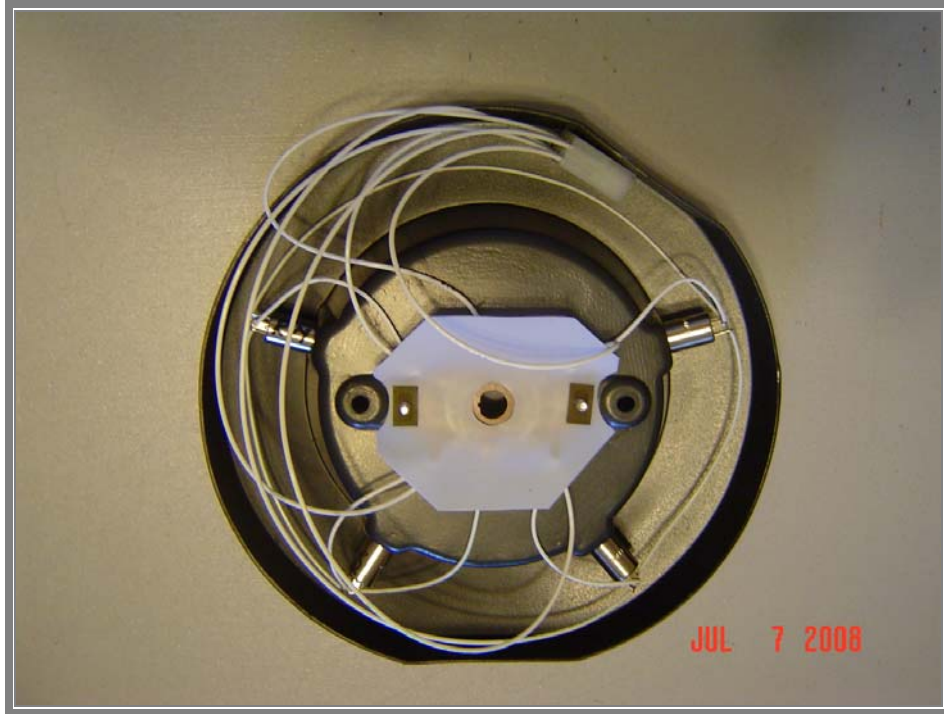
THE RED OUTLINED PORTION ABOVE IS INVOLVED IN THE RE-WIRING OF THE FUEL QUANTITY SELECTOR COVERED IN THIS MANUAL. THE 6 RED CIRCLES INDICATE THOSE CONNECTION POINTS INVOLVED IN THE RECEPTACLE/PLUG ASSEMBLY.

9-57

TYPICAL WIRING DIAGRAM SUPPLIED WITH THE INSTALLATION MANUAL



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FUEL SELECTOR SWITCHES ASSEMBLED INTO PROTECTOR PLATE



NEW FUEL SELECTOR SWITCHES ASSEMBLY



PIPER COMANCHE SERVICE MANUAL

11-78. **Fuel Quantity Indicator.** (PA-24-250, Serial Nos. 24-2844 and up, PA-24-260 and PA-24-400.)

11-79. **General.** The Comanche incorporates only one fuel quantity gauge in this system. This gauge will indicate the amount of fuel in the cell that is selected. This arrangement is made possible by a selector switch mounted on the fuel selector valve. The switch is located directly below the fuel selector plate.

An over-ride system is incorporated so that it is possible to check the amount of fuel available in the remaining cells, without moving the selector handle to that cell position. This is accomplished by depressing the red button (located on the fuel selector plate) under the desired fuel cell position. The fuel gauge will indicate the amount of fuel available in that cell. When the red button is released the indicating system will return to its normal operation of indicating the amount of fuel in the tank selected.

11-80. **Removal And Replacement.** Refer to Paragraph 11-20 of this section.

11-81. **Troubleshooting.**

TABLE XI-XV. FUEL QUANTITY INDICATORS

| Trouble | Cause | Remedy |
|---------------------------------------|--|--|
| Fuel gauge fails to indicate. | Broken wiring. Gauge not operating. Float is filled with fuel. Circuit breaker out. Defective selector switch. | Check continuity and repair. Replace panel unit. Replace sender unit. Check for possible short circuit then reset breaker. Check switch installation, replace switch if necessary. |
| Fuel gauge indicates full constantly. | Incomplete ground. | Check wiring, sender unit and gauge. Repair or replace. |



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PIPER COMANCHE SERVICE MANUAL

TABLE XI-XV. FUEL QUANTITY INDICATORS (cont.)

| Trouble | Cause | Remedy |
|----------------------------|--|---|
| Fuel gauge indicates zero. | Fuel selector in "OFF" position. Shorted connection at selector switch or other wiring. | Normal. Check switch and wiring. |

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